



NATIONAL TRANSPORTATION SAFETY BOARD

49 CFR Part 831

[Docket No.: NTSB-2021-0008]

RIN 3147-AA19

Commercial Space Investigations

AGENCY: National Transportation Safety Board (NTSB).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: For transparency of the agency's commercial space safety investigative authority, the NTSB is proposing adding Subpart F for Commercial Space Investigations to supplement its Investigation Procedures. By codifying its investigative role in commercial space transportation, the NTSB anticipates that Subpart F will enhance transportation safety by enabling the agency to carry out its statutory mission of conducting safety investigations, identifying necessary corrective actions, and preventing future space transportation accidents and incidents.

DATES: Submit written comments regarding this NPRM by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, identified by Docket Number (No.) NTSB-2021-0008, by any of the following methods:

- Federal e-Rulemaking Portal: <https://www.regulations.gov>.
- E-mail: rulemaking@ntsb.gov.
- Fax: 202-314-6090.
- Mail/Hand Delivery/Courier: NTSB, Office of General Counsel, 490 L'Enfant Plaza East, SW, Washington, DC 20594.

Instructions: All submissions in response to this NPRM must include Docket No. NTSB-2021-0008. All comments received will be posted without change to <https://www.regulations.gov>, including any personal information provided.

Docket: For access to the docket, go to <https://www.regulations.gov> and search Docket No. NTSB-2021-0008.

FOR FURTHER INFORMATION CONTACT: Kathleen Silbaugh, General Counsel, (202) 314-6080, rulemaking@ntsb.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Purpose

The NTSB is an independent investigatory agency charged with determining the facts, circumstances, and causes of transportation accidents and incidents. The NTSB's investigation procedures are contained in part 831, which is divided into subparts. The procedures applicable to all modes of transportation are contained in Subpart A of 49 CFR part 831. Subparts B - E are specific to the type of transportation; Subpart B, for example, focuses on Aviation Investigations. The agency notes that the commercial space industry is a unique mode of transportation and the investigatory needs of a commercial space accident and incident—such as the reporting of commercial space accidents and incidents, and the preservation of wreckage, evidence, and records—are distinct enough to warrant its own subpart. Thus, the NTSB proposes the addition of Subpart F for Commercial Space Investigations.

The agency's statutory authority to investigate commercial space launch accidents derives from 49 U.S.C. 1131(a)(1)(F), which provides in pertinent part that the NTSB shall investigate and establish the facts, circumstances, and probable cause of any other accident related to the transportation of any other individuals or property when the Board decides the accident is catastrophic, the accident involves problems of a recurring character, or investigating the accident would carry out the NTSB's statutory mandate.

The NTSB has exercised this authority and both led and supported commercial space launch and reentry investigations for more than 20 years. For example, the NTSB investigated the February 9, 1993, procedural anomaly associated with the launch of an Orbital Sciences Corporation Pegasus expendable launch vehicle. The NTSB investigated the incident and issued safety recommendations to the U.S. Department of Transportation (DOT), the National Aeronautics and Space Administration (NASA), and Orbital Sciences Corporation.

The NTSB also led the investigation of the SpaceShipTwo test flight breakup on October 31, 2014, involving one fatality and one serious injury. In testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, United States House of Representatives on February 27, 2018, the NTSB's then Director of Aviation Safety (Director) referenced the SpaceShipTwo investigation, stating: "[f]oremost among the safety issues identified was the need to consider and protect against human error for safe manned spaceflight, which is the responsibility of designers, operators, and overseers." The Director further testified that there are circumstances within commercial space when the definition of accident or incident would not be met, and the NTSB would not be involved.

The NTSB was requested to assist several significant noncommercial space investigations; including those involving the Space Shuttle Columbia and NASA Genesis. On February 1, 2003, when the Space Shuttle Columbia fatally broke up while reentering Earth, NTSB investigators launched immediately to assist NASA and the Columbia Accident Investigation Board with the investigation. Several NTSB performance engineers, radar specialists and weather experts conducted ballistic analysis of the vehicle debris and examined radar and weather data to define the wreckage area in order to locate debris. Six NTSB investigators also helped NASA engineers reassemble the shuttle at Cape Canaveral. Overall, more than 50 NTSB employees supported this investigation.

For the September 8, 2004, NASA Genesis sample-return capsule crash in Tooele, Utah, an NTSB investigator launched to the accident scene with NASA's mishap investigation board to

document the site and recover wreckage, and to set up the investigation and develop the investigation plan. The NTSB Systems and Materials Laboratory investigators also participated by examining and documenting the vehicle's wiring harness, and by developing and reviewing portions of the final report.

As in all transportation modes, the NTSB neither regulates commercial space nor finds fault when investigating mishaps; instead, the NTSB's investigations focus on safety issues. Accordingly, the NTSB is proposing Subpart F to clarify the extent of the agency's involvement and the process that will be followed by all parties in an NTSB-led commercial space investigation.

In conducting commercial space investigations, the NTSB adheres to the terms memorialized in a Memorandum of Agreement (Agreement) with the Federal Aviation Administration (FAA)¹ and in a Memorandum of Understanding (MOU) with the FAA and the United States Air Force (USAF).² It is important to note that the Agreement and MOU were developed before commercial human spaceflight, or reusable launch vehicles, was realistically foreseen and so only address cargo operations. The purpose of the Agreement and MOU was to specify when the NTSB would initiate an investigation into a commercial space mishap.

The 1975 Reimbursable Memorandum of Agreement between NTSB and DOT establishes the relationships, notification procedures, coordination requirements, and reporting responsibilities of both agencies. The Agreement further identifies and describes the conditions and agreements that exist regarding the exchange of data, availability of resources, conduct of studies and other services, and reimbursement for services rendered. Significantly, the Agreement acknowledges that while the objectives of both agencies' investigations are similar, the Agreement expounds on the differences—the NTSB investigates accidents to determine their probable cause and propose recommendations; whereas the DOT investigates to determine

¹ https://www.faa.gov/documentLibrary/media/Order/FAA_Order_8020.11D.pdf.

² https://www.faa.gov/space/legislation_regulation_guidance/media/mou_space_launch_accidents.pdf.

compliance with its regulations, evaluate improvements that should be made to existing standards and regulations and/or the transportation system to improve safety, and take appropriate enforcement action for any regulatory violation.

The Agreement categorizes each mode of transportation into separate appendices that detail the investigative procedures for a specific area of transportation. Appendix H addresses commercial travel, which was added in 1985 and subsequently revised in 1999 with non-substantive edits. Appendix H clarifies that the NTSB will investigate all commercial space launch accidents resulting in known impact of a commercial launch vehicle, its payload or any component thereof outside the impact limit lines designated by the launch range facility; or a fatality or serious injury as defined in 49 CFR 830.2 to any person who is not associated with commercial space launch activities and not located on the launch range facility; or any damage estimated to exceed \$25,000 to property which is not associated with commercial space launch activities and which is not located on the launch range facility. Appendix H notes that the agreement does not impair the NTSB's authority to investigate other commercial space launch accidents which, in the judgment of the NTSB, are subject to section 304(a)(1)(F) of the Independent Safety Board Act of 1974.³ Appendix H provides that any other investigations of commercial space launch accidents by the NTSB, other than those described, will be subject to the mutual agreement of the NTSB and the FAA's Associate Administrator for Commercial Space Transportation (AST).

The MOU became effective in September 2004 and establishes the relationship among the NTSB, FAA, and USAF during space launch accidents and provides a guide to the exchange of information and participation in accident investigations.⁴

Both the Agreement and the MOU remain in effect. Notably, at the time both documents were signed, commercial human space launches were not viable. With commercial human space

³ <https://www.nts.gov/safety/safety-studies/Documents/SIR9302.pdf>.

⁴ https://www.faa.gov/space/legislation_regulation_guidance/media/mou_space_launch_accidents.pdf.

flight now a reality, however, the NTSB believes codifying its authority to investigate commercial space safety accidents and incidents in Subpart F is necessary. By transitioning and updating the information from the Agreement and MOU to Subpart F, the commercial space industry would have better clarity on when the NTSB would initiate an investigation of a commercial space mishap. This process will also allow industry to provide feedback to the NTSB through the rulemaking process for any future updates as the industry develops.

The NTSB acknowledges that the DOT's authority to license commercial space transportation activities stems from 51 U.S.C. Chapter 509 for Commercial Space Launch Activities. Significantly, that authority did not include the process for investigating commercial space accidents and incidents independent of any NTSB intervention. While 51 U.S.C. 50917(a) does mention that in carrying out Chapter 509 the DOT Secretary may "conduct investigations and inquiries," it does not appear that Chapter 509 was designed to give the DOT the independent authority to investigate commercial space accidents and incidents. Introduced in the House of Representatives as the Commercial Space Launch Act (Act) on June 5, 1984, Congressman Harold Lee Volkmer clarified that the Act assigned the DOT the responsibility for issuing and enforcing commercial launch licenses, and for encouraging private sector use of government-developed space technology.⁵ He noted that the purpose of the bill was to promote economic growth, simplify licensing, and have the DOT oversee commercial launch operations and issue licenses to conduct such activities.⁶ Based on the deliberations of other representatives, it is evident that the intent of the legislation was to encourage private sector participation in the commercial space industry for the benefit of the U.S. economy. This intent was further expressed by Senator Paul Seward Tribble, Jr., who explicitly stated that the central purpose of the legislation was to encourage the growth of a commercial space launch capability.⁷ He continued

⁵ 98 CONG. REC. H. 3942 (daily ed. June 5, 1984) (statement of Rep. Volkmer).

⁶ *Id.*

⁷ 98 CONG. REC. H. 3942 (daily ed. Oct. 9, 1984) (statement of Sen. Tribble).

that the bill designated the DOT as the lead agency to encourage and facilitate expendable launch vehicle commercialization.

The NTSB further acknowledges that the Congress does not wish to discourage development of this emerging industry and has charged the FAA to primarily focus on protection of the public and that the spaceflight participants are taking part in an inherently risky mode of transportation. The NTSB recognizes the “learning period” is still in effect that limits regulations “restricting or prohibiting design features or operating practices,” and that there is a need to restrict the release of certain sensitive information to safeguard critical defense-related technologies in order to protect United States national security and foreign policy objectives (International Traffic in Arms Regulations (ITAR), and Export Administration Regulation (EAR)).

Consistent with this legislative history and the NTSB’s statutory authority, the Board believes that codifying NTSB’s commercial space safety investigations in Subpart F is warranted under 49 U.S.C. 1131(a)(1)(F). The Board notes that per 49 U.S.C. 1131(b), the NTSB has statutory priority over any investigation by a U.S. department or agency. The issuance of Subpart F would resolve the matters currently addressed in Appendix H with the FAA.

II. Section-by-Section Analysis

831.70 Authority.

Section 831.70 references the NTSB’s statutory authority under 49 U.S.C. 1131(a)(1)(F), which provides that the NTSB shall investigate and establish the facts, circumstances, and probable cause of any other accident related to the transportation of any other individuals or property when the Board decides that the accident is catastrophic; the accident involves problems of a recurring character; or the investigation of the accident would carry out the NTSB’s statutory authority.

831.71 Purpose.

Section 831.71 specifies that Subpart F establishes the agency's safety investigative procedures for commercial space accidents or incidents.

831.72 Applicability.

Section 831.72 clarifies that the NTSB would investigate a commercial space launch or reentry accident, but may investigate a commercial space launch or reentry incident licensed by FAA AST.

831.73 Definitions.

Section 831.73 establishes the terminology used in Subpart F.

831.74 Immediate notification.

In the event of a commercial space launch or reentry accident or incident, § 831.74 requires that licensees and permittees immediately call the NTSB's Response Operation Center.

831.75 Information to be given in notification.

Section 831.75 establishes what must be reported in the event of a commercial space launch or reentry accident or incident.

831.76 Preservation of commercial space launch or reentry vehicle wreckage, payload, and records.

Section 831.76 addresses what a licensee or permittee must do when preserving the wreckage, payload, and records. The preservation of materials, documents, data, and wreckage is essential for the NTSB's safety investigation and the accompanying safety recommendations.

831.77 Nature of investigation.

Section 831.77 clarifies why the NTSB conducts its safety investigations, and that the agency determines probable cause and issues safety recommendations. This section further clarifies that the agency does not investigate all incidents; whether the NTSB investigates a launch or reentry incident is contingent on the circumstances of the mishap.

831.78 Relationships with other agencies.

Section 831.78 allows for participation of other Federal agencies, but establishes the limitations and expectations of the participants.

831.79 Request to withhold information.

While § 831.13 is applicable to Subpart F, the NTSB is adding § 831.79 to address the protection of defense-related technologies. The regulation is intended to safeguard U.S. national security and further U.S. foreign policy objectives.

831.80 Provision and dissemination of investigative information.

Section 831.80 provides that § 831.13 applies to commercial space investigations, but adds that the release of information will comply with the applicable export control regulations.

831.81 Commercial space investigation interviews.

Section 831.81 supplements the provisions contained in § 831.7, but puts the public on notice that interviews or statements conducted during an NTSB commercial space investigation will become part of the public record subject to the applicable export control regulations.

III. Regulatory Analysis

Because the NTSB is an independent agency, this proposed rule does not require an assessment of its potential costs and benefits under section 6(a)(3) of Executive Order (E.O.) 12866, Regulatory Planning and Review, 58 FR 51735 (Sept. 30, 1993). In addition, the NTSB has considered whether this rule would have a significant economic impact on a substantial number of small entities, under the Regulatory Flexibility Act (5 U.S.C. 601-612). The NTSB certifies under 5 U.S.C. 605(b) that this rule would not have a significant economic impact on a substantial number of small entities.

The NTSB does not anticipate this rule will have a substantial, direct effect on state or local governments or will preempt state law; as such, this rule does not have implications for federalism under E.O. 13132, Federalism, 64 FR 43255 (Aug. 4, 1999).

This rule complies with all applicable standards in sections 3(a) and 3(b)(2) of E.O. 12988, Civil Justice Reform, 61 FR 4729 (Feb. 5, 1996), to minimize litigation, eliminate

ambiguity, and reduce burden. The NTSB has evaluated this rule under: E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629 (Feb. 16, 1994); E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks, 62 FR 19885 (Apr. 21, 1997); E.O. 13175, Consultation and Coordination with Indian Tribal Governments, 65 FR 67249 (Nov. 6, 2000); E.O. 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, 66 FR 28355 (May 18, 2001); and the National Environmental Policy Act, 42 U.S.C. 4321-47. The NTSB has concluded that this proposed rule neither violates nor requires further consideration under those orders, statutes, E.O.s, and acts.

The Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3507(d)) requires that the NTSB consider the impact of paperwork and other information collection burdens imposed on the public. Here, proposed rule 831.74 directs the public to call the agency's Response Operations Center when reporting a commercial space accident or incident, and provide the information enumerated in proposed 49 CFR 831.75. The NTSB will use the information collected to determine whether to commence an investigation into the commercial space accident or incident. Additionally, the accuracy of the information collected will be used in issuing safety recommendations to prevent future commercial space accidents and incidents. However, because the NTSB anticipates that it will receive less than one notification of a mishap accident/incident per year, the agency will not submit an information collection request to the Office of Management and Budget. In other words, the NTSB is not imposing an information collection on ten or more persons to trigger the PRA.

List of Subjects in 49 CFR Part 831

Accident, Commercial space launch, Commercial space reentry, Incident, Mishap, Space transportation.

For the reasons set forth in the preamble, the NTSB proposes to add 49 CFR part 831 to read as follows:

PART 831—INVESTIGATION PROCEDURES

1. The general authority citation for part 831 continues to read as follows:

Authority: 49 U.S.C. 1113(f).

2. Add subpart F to read as follows:

Subpart F—COMMERCIAL SPACE INVESTIGATIONS

Sec.

831.70 Authority.

831.71 Purpose.

831.72 Applicability.

831.73 Definitions.

831.74 Immediate notification.

831.75 Information to be given in notification.

831.76 Preservation of commercial space launch or reentry vehicle wreckage, payload, and records.

831.77 Nature of investigation.

831.78 Relationships with other agencies.

831.79 Request to withhold information.

831.80 Provision and dissemination of investigative information.

831.81 Commercial space investigation interviews.

Authority: 49 U.S.C. 1113(f), 1116, 1131(a)(1)(F); 49 CFR 831.2(d).

§ 831.70 Authority.

The NTSB conducts commercial space investigations under 49 U.S.C. 1131(a)(1)(F) and works closely with parties to the investigation to collect evidence related to a commercial launch or reentry accident. An investigation conducted under the authority of the NTSB has priority over any investigation conducted by another Federal agency, except those conducted by a commission initiated by the President of the United States.

§ 831.71 Purpose.

This subpart establishes investigative procedures specifically related to commercial space accidents or incidents.

§ 831.72 Applicability.

The regulations in this subpart apply when the NTSB is leading an investigation into a launch or reentry commercial space accident, or has elected to investigate a launch or reentry incident. This subpart pertains to:

- (a) Initial notification and later reporting of commercial space launch and reentry accidents licensed by Federal Aviation Administration's (FAA) Associate Administrator for Commercial Space Transportation (AST), as specified in this part, wherever they occur.
- (b) Preservation of launch or reentry vehicles, as specified in this part.

§ 831.73 Definitions.

As used in this subpart the following words or phrases are defined as follows:

Commercial space launch means a launch authorized to be conducted under a license or permit issued by the FAA.

Commercial space reentry means a reentry authorized to be conducted under a license or permit issued by the FAA.

Fatal injury means any injury which results in death within 30 days of the accident.

Launch or reentry accident means any mishap associated with an FAA-licensed or permitted activity resulting in:

- (1) A fatal injury or serious injury to any person as a result of the operation of the vehicle; or
- (2) The impact of hazardous debris outside the designated hazard area or designated landing site (excluding unmanned vehicles that cause no hazard to the public).

Launch or reentry incident means any mishap associated with an FAA-licensed or permitted activity resulting in:

- (1) A malfunction of a safety-critical system (i.e., flight termination system, etc.);

(2) A failure of the licensee's or permittee's safety organization, safety operations, or safety procedures; or

(3) A hazardous condition with increased likelihood of causing serious or fatal injuries to any person (i.e., use of launch escape system).

Mishap means a launch or reentry accident, launch or reentry incident, failure to complete a launch or reentry as planned, or an unplanned event or series of events resulting in a fatality or serious injury.

Serious injury means an injury as defined under 49 CFR 830.2.

§ 831.74 Immediate notification.

In the event of a mishap, the licensee or permittee of any launch or reentry vehicle shall immediately notify the NTSB's Response Operations Center at 844-373-9922 or 202-314-6290.

§ 831.75 Information to be given in notification.

The notification required in § 831.74 shall contain the following information, if available:

- (a) Date and time of the accident or incident;
- (b) Launch vehicle;
- (c) Launch/reentry licensee or permittee;
- (d) Type of activity (launch, reentry, landing);
- (e) Vehicle damage;
- (f) Location of the launch or reentry vehicle with reference to some easily-defined geographical point;
- (g) Number of persons involved, number killed, and number seriously injured; and
- (h) Circumstances of the accident or incident.

§ 831.76 Preservation of commercial space launch or reentry vehicle wreckage, payload, and records.

(a) The licensee or permittee of a commercial space launch or reentry vehicle involved in an accident or incident for which notification must be given, is responsible for preserving the following until the Board takes custody thereof or a release is granted pursuant to § 831.12(b):

(1) Any wreckage and payload aboard the vehicle; and

(2) All records, including but not limited to all recording mediums, maintenance, and voice and video recorders, pertaining to the operation and maintenance of the launch or reentry vehicle.

(b) Prior to the time the Board or its authorized representative takes custody of the wreckage or payload, such wreckage or payload may not be disturbed or moved except to the extent necessary:

(1) To remove persons injured or trapped;

(2) To protect the wreckage from further damage; or

(3) To protect the public from injury.

(c) Where it is necessary to move the wreckage or payload, sketches, descriptive notes, and photographs shall be made, if possible, of the original positions and condition of the wreckage and any significant impact marks.

(d) The licensee or permittee of a launch or reentry vehicle involved in an accident or incident shall preserve and retain all streamed and digital data that is on board the launch or reentry vehicle, telemetered to an offsite location, or that is recorded remotely (i.e., ground station, chase plane, etc.).

(e) The licensee or permittee of a launch or reentry vehicle involved in an accident or incident shall retain all records, reports, internal documents, and memoranda dealing with the accident or incident, until the Board authorizes its release.

§ 831.77 Nature of investigation.

The NTSB conducts investigations to determine the facts, conditions, and circumstances relating to a launch or reentry accident or incident. The NTSB uses these results to determine one or

more probable causes, and to issue safety recommendations to prevent or mitigate the effects of a similar commercial space casualty launch or reentry accident or incident.

§ 831.78 Relationships with other agencies.

(a) The NTSB will provide for appropriate participation by other Federal agencies in any NTSB investigation. Such agencies may not participate in the NTSB's probable cause determination.

(b) Nothing in this section impairs the authority of any other Federal agency to investigate a commercial launch or reentry accident under applicable provisions of law. These agencies are expected to coordinate with the NTSB Investigator-in-Charge (IIC) to avoid interference with and duplication of the NTSB's investigative efforts.

§ 831.79 Request to withhold information.

In addition to the provisions established in § 831.6, the NTSB will not disclose any information subject to export control regulations related to defense and military technologies. The NTSB will coordinate with the appropriate government agencies to ensure all publicly-released investigative reports or public meetings comply with applicable regulations.

§ 831.80 Provision and dissemination of investigative information.

In addition to the provisions provided in § 831.13, the release of information will comply with the applicable export control regulations.

§ 831.81 Commercial space investigation interviews.

In addition to the provisions set forth in § 831.7, interviews or statements conducted during an NTSB commercial space investigation will become part of the public record subject to the applicable export control regulations.

Jennifer Homendy,

Chair.